

IN THE CLAIMS

Please add claims 36-48.

1. (Previously Amended) A method of forming a dielectric, comprising:
forming a fluorine containing film on a substrate; and
placing the substrate into a reaction chamber and exposing the fluorine containing film to a reducing plasma, wherein the reducing plasma is formed in a chamber remote from the reaction chamber containing the substrate.
2. (Original) The method of Claim 1, wherein the substrate is a silicon wafer, and the fluorine containing film is a substantially planar insulating layer.
3. (Original) The method of Claim 1, wherein the fluorine containing film has exposed sidewalls.
4. (Original) The method of Claim 3, wherein the fluorine containing film has a covered top surface.
5. (Original) The method of Claim 1, wherein the plasma is formed from a hydrogen bearing precursor gas and a carrier gas.
6. (Original) The method of Claim 5, wherein the hydrogen bearing precursor comprises NH_3 gas.

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7. (Original) The method of Claim 6, wherein the carrier gas comprises a gas selected from the group consisting of N₂, Ar and He.

8. (Previously Amended) The method of Claim 7, wherein the fluorine containing film comprises a material selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, fluorinated siloxane polymers, and SiOF.

9. (Original) The method of Claim 1, wherein the fluorine containing film comprises parylene-AF4.

10. (Previously Amended) A method of forming an interlayer dielectric in an integrated circuit, comprising:

depositing a fluorinated material on a substrate;

forming via openings in the fluorinated material; and

exposing the fluorinated material to a hydrogen containing plasma in a reaction chamber, wherein the plasma is formed in a chamber remote from the reaction chamber containing the fluorinated material.

11. (Previously Amended) The method of Claim 10, wherein the fluorinated material is selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, fluorinated siloxane polymers, and SiOF.

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12. (Original) The method of Claim 11, further comprising depositing a conductive material in the via openings.

13. (Previously Amended) The method of Claim 11, wherein the material comprises parylene-AF4.

14. (Original) The method of Claim 13, further comprising depositing a hardmask layer over the parylene-AF4 prior to forming the via openings.


15. (Original) The method of Claim 14, wherein depositing the hardmask comprises forming a layer of silicon nitride over the fluorinated material.

16. (Original) The method of Claim 10, wherein the plasma is formed in a reaction chamber from ammonia and argon at a pressure between 1 mTorr and 50 Torr and an RF power of between 100 watts and 500 watts.

17. (Original) The method of Claim 16, wherein the ammonia is passed into the reaction chamber at a flow rate in the range of 10 sccm to 3 liters/minute.

18-20. (Withdrawn)

21. (Previously Amended) A method of forming a dielectric, comprising:

 depositing a material on a substrate, wherein the material is selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, and fluorinated siloxane polymers;

forming via openings in the material; and

exposing the material to a reducing plasma in a reaction chamber, wherein the reducing plasma is formed in a chamber remote from the chamber containing the material.

22. (Cancelled)

23. (Previously Added) The method of Claim 21, further comprising depositing a conductive material in the via openings.

24. (Previously Added) The method of Claim 21, wherein the material comprises parylene-AF4.

25. (Previously Added) The method of Claim 24, further comprising depositing a hardmask layer over the parylene-AF4 prior to forming the via openings.

26. (Previously Added) The method of Claim 25, wherein depositing the hardmask comprises forming a layer of silicon nitride over the material.

27. (Previously Added) The method of Claim 21, wherein the plasma is formed in a reaction chamber from ammonia and argon at a pressure between 1 mTorr and 50 Torr and an RF power of between 100 watts and 500 watts.

28. (Previously Added) The method of Claim 27, wherein the ammonia is passed into the reaction chamber at a flow rate in the range of 10 sccm to 3 liters/minute.

29. (Previously Amended) A method of forming a dielectric, comprising:
forming a fluorine containing film on a substrate having a top surface;
depositing a hardmask layer on the top surface of the fluorine containing film;
forming via openings in the fluorine containing film, wherein the via openings define sidewalls; and
exposing the hardmask layer and the sidewalls to a reducing plasma.

30. (Previously Amended) The method of Claim 29, further comprising exposing the hardmask layer and the sidewalls to the reducing plasma in a reaction chamber, wherein the reducing plasma is formed in a chamber remote from the reaction chamber containing the fluorine containing film.

31. (Previously Added) The method of Claim 29, wherein the fluorine containing film comprises a material selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, fluorinated siloxane polymers, and SiOF.

32. (Previously Added) The method of Claim 29, further comprising depositing a conductive material in the via openings.

33. (Previously Added) The method of Claim 29, wherein depositing the hardmask comprises forming a layer of silicon nitride over the top surface of the fluorine containing film.

34. (Previously Added) The method of Claim 29, wherein the plasma is formed in a reaction chamber from ammonia and argon at a pressure between 1 mTorr and 50 Torr and an RF power of between 100 watts and 500 watts.

35. (Previously Added) The method of Claim 34, wherein the ammonia is passed into the reaction chamber at a flow rate in the range of 10 sccm to 3 liters/minute.

36. (New) A method of forming a dielectric, comprising:

forming a fluorine containing film on a substrate, the fluorine containing film having a top surface and sidewalls; and

placing the substrate into a reaction chamber and simultaneously exposing the top surface and sidewalls of the fluorine containing film to a reducing plasma, wherein the reducing plasma is formed in a chamber remote from the reaction chamber containing the substrate.

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37. (New) The method of Claim 36, wherein the substrate is a silicon wafer, and the fluorine containing film is a substantially planar insulating layer.

38. (New) The method of Claim 36, wherein the plasma is formed from a hydrogen bearing precursor gas and a carrier gas.

39. (New) The method of Claim 38, wherein the hydrogen bearing precursor comprises NH_3 gas.

40. (New) The method of Claim 39, wherein the carrier gas comprises a gas selected from the group consisting of N_2 , Ar and He.

41. (New) The method of Claim 40, wherein the fluorine containing film comprises a material selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, fluorinated siloxane polymers, and SiOF.

42. (New) The method of Claim 36, wherein the fluorine containing film comprises parylene-AF4.

43. (New) A method of forming an interlayer dielectric in an integrated circuit, comprising:

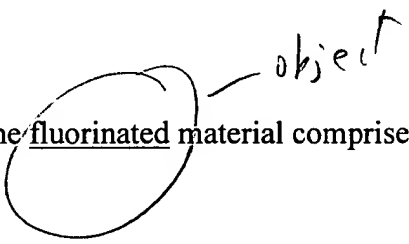
depositing a fluorinated material on a substrate, the fluorinated material having a top surface;

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forming via openings in the fluorinated material, wherein the via openings define sidewalls; and

simultaneously exposing the top surface and the sidewalls of the fluorinated material to a hydrogen containing plasma in a reaction chamber, wherein the plasma is formed in a chamber remote from the reaction chamber containing the fluorinated material.

44. (New) The method of Claim 43, wherein the fluorinated material is selected from the group consisting of a-C:F, parylene AF4, carbon-doped SiOF, fluorinated organic polymers, fluorinated siloxane polymers, and SiOF.

45. (New) The method of Claim 44, further comprising depositing a conductive material in the via openings.

46. (New) The method of Claim 44, wherein the fluorinated material comprises parylene-AF4. 

47. (New) The method of Claim 43, wherein the plasma is formed in a reaction chamber from ammonia and argon at a pressure between 1 mTorr and 50 Torr and an RF power of between 100 watts and 500 watts.

48. (New) The method of Claim 47, wherein the ammonia is passed into the reaction chamber at a flow rate in the range of 10 sccm to 3 liters/minute.